CLAIMS

What is claimed is:

1. A system for streaming data transport over a multi-protocol label switching (MPLS) network, comprising:

an ingress router, comprising,

a first multiplexer that receives and processes at least one input data stream and outputs single stream data comprising a plurality of data packets, each of said plurality of data packets having a data portion,

an IP traffic generator that generates IP routing packets at a fixed or dynamic predetermined interval in response to a trigger signal,

a second multiplexer, coupled to said first multiplexer and said IP traffic generator, that inserts said IP routing packets into said single stream data, and

a first MPLS converter, coupled between said second multiplexer and said MPLS network, that attaches a label to each of said plurality of data packets to generate a combined data stream comprising a plurality of data packets of a first type interspersed between a plurality of data packets of a second type, each of said data packets carrying said label generated in accordance with each of said IP routing packets, wherein one-to-one mapping is performed between said label and said address information of each of the IP-routing packets; and

an egress router, comprising,

a second MPLS converter, coupled to said MPLS network, that receives said combined data stream from said MPLS network and removes said label from each of said plurality of data packets of said combined data stream,

a discriminator, coupled to said second MPLS converter, that separates said combined data stream into IP routing packets and said single stream data,

a de-multiplexer, coupled to said discriminator, that receives said single stream data and generates at least one output data stream, wherein said de-multiplexer reconstructs said at least one input data stream, and

a traffic monitor, coupled to said discriminator, that receives said IP routing packets for IP stream data and generates said trigger signal, to provide for monitoring and feedback functions, wherein said system is configured to transport streamed data bidirectionally.

2. A system for streaming data, comprising:

a first router that receives input stream traffic and generates a combined data stream comprising a plurality of data packets that include a first type of data packet and a second type of data packet, generated in accordance with routing information;

an MPLS network that is coupled to said first router and receives and transports said combined data stream in accordance with said routing information; and

a second router coupled to said MPLS network and generating output stream traffic, wherein said first router is capable of operating as said second router and said second router is capable of operating as said first router to transport streamed data bidirectionally.

3. The system of claim 2, wherein said second type of data packet comprises a label and a data portion, and said first type of data packet comprises a label, an IP header and a data portion, and wherein said data portion of each of said first type of data packet and said second type of data packet comprises at least one of a data payload, control information used to generate said output stream traffic, and an empty payload.

4. The system of claim 2, said MPLS network comprising:

a routing system that routes said combined data stream; and

at least one router element that is coupled to said MPLS network and one of discards, stores and marks said first type of data packet detected by said routing system for additional processing if an IP header is not detected in accordance with a validity test, and said routing system processes and routes said combined data stream in accordance with an IP header detected in said first type of data packet by said routing system wherein said system operates using a bearer selected in accordance with a traffic type.

5. The system of claim 2, said first router comprising:

a first multiplexer that receives said input stream traffic and outputs single stream data comprising a plurality of data packets, each of said data packets having a data portion;

an IP traffic generator that generates IP routing packets in response to a trigger signal generated at a fixed or dynamic predetermined interval;

a second multiplexer, coupled to said first multiplexer and said IP traffic generator, that receives said single stream data and said IP routing packets and inserts said IP routing packets into said single stream data in response to said routing information; and

a first MPLS converter that is coupled between said second multiplexer and said MPLS network, and attaches a label to each of said plurality of data packets, said label containing data generated in accordance with said IP header, and outputs said combined data stream to said MPLS network, wherein said label is attached to each of said plurality of data packets corresponding to the IP destination address contained in said IP header of the IP routing packets.

6. The system of claim 2, said second router comprising:

a second MPLS converter, coupled to said MPLS network, that receives said combined data stream from said MPLS network and removes a label from each of said plurality of data packets of said combined data stream;

a discriminator, coupled to said second MPLS converter, that separates said combined data stream into IP routing packets and said single stream data;

a de-multiplexer, coupled to said discriminator, that receives said single stream data and generates said output stream data, wherein said de-multiplexer operates in accordance with input stream traffic state information contained in said data portion of each packet to reconstruct said input stream traffic; and

a traffic monitor, coupled to said discriminator, that receives said IP header data and generates a trigger signal that provides monitoring and feedback for said system.

7. A method of transport of packetized streaming data over a multi-protocol label switching (MPLS) network, comprising the steps of:

generating a composite data stream by selectively combining a plurality of data packets of a single stream of packetized data, said single stream comprising a plurality of incoming data streams, with a data stream containing full IP header information at a predetermined interval, and in accordance with a routing address identifying a destination of said composite data stream;

transmitting said composite data stream to a first MPLS converter that assigns a MPLS label to each of said plurality of data packets in said composite data stream, in accordance with the IP header information that includes routing information to a second MPLS converter;

transporting said composite data stream to said second MPLS converter that is configured to strip said MPLS label from each of said plurality of data packets of said composite data stream;

separating said stripped, combined data stream into non-IP header data and IP header data having said IP native format; and

outputting said non-IP header data to generate outgoing data and outputting said IP header data to control said routing mechanism via a feedback signal, wherein said MPLS network is configured to transport streamed data bidirectionally.

8. The method of claim 7, comprising generating said IP header in response to a routing information generated by said routing mechanism, said generating step comprising:

inserting said IP header in selected data packets of said single data stream at a predetermined interval and adding said MPLS label to each of said selected data packets to generate a first type of data packet, and

generating a second type of data packet by inserting said MPLS label to each of a plurality of non-selected data packets of said single data stream, wherein said first type of data packet is interspersed between said second type of data packets at said predetermined interval.

9. A method of streaming data transport over a multi-protocol label switching (MPLS) network, comprising the steps of:

generating a composite data stream comprising a first data packet adjacent to a plurality of second data packets in accordance with a native format of an incoming data stream;

transporting said composite data stream over said MPLS network; and

producing output stream traffic, wherein said MPLS network is configured to transport streamed data bidirectionally.

10. The method of claim 9, said transporting step comprising transporting said composite data stream over said MPLS network in accordance with said first data packet or at a predetermined interval, by reading information from said first data packet in accordance with

routing information, wherein said predetermined interval results in a router reading only said first data packet having IP header information.

11. The method of claim 9, wherein said first data packet is different from said plurality of second data packets when said native format is an IP format, and is inserted at a fixed or dynamic predetermined interval generated in accordance with a trigger signal generated in said producing step.

12. The method of claim 9, said producing step comprising the steps of:

stripping a label from said first data packet and said plurality of second data packets in said composite data stream;

separating said stripped, composite data stream into non-IP header data and IP header data; and

outputting said non-IP header data to generate said output stream traffic in said native format of said incoming data stream and outputting said IP header data to a traffic monitor that controls said routing of said MPLS network to generate a trigger signal that provides feedback and monitoring for said MPLS network.

13. The method of claim 9, wherein said first data packet is one of discarded, stored and marked by a router when said first data packet is not associated with IP header information, in accordance with a validity test.

14. The method of claim 9, said generating step comprising generating said composite data stream having at least one full-IP data packet comprising said first data packet positioned at a predetermined interval with respect to a plurality of labeled data packets comprising said plurality of second data packets.